

Title (en)

Integrally woven composite fan blade using progressively larger weft yarns

Title (de)

Integral gewebte Bläser-Verbundschaukel mit sich progressiv vergrößernden Kuliergarnen

Title (fr)

Aube de soufflante composite intégralement tissée utilisant des fils de trame progressivement plus grands

Publication

EP 2423441 B1 20190123 (EN)

Application

EP 11179499 A 20110831

Priority

US 87234610 A 20100831

Abstract (en)

[origin: EP2423441A2] A composite blade (32) includes a preform (48) and a binder. The preform is a preform of yarns woven in three-dimensions and has a tip region (40), a root region (44) and an intermediate region (42). The intermediate region is positioned between the tip region and the root region. The yarns comprise warp yarns (58) and weft yarns (60). The warp yarns form a longitudinal axis (46). The weft yarns are positioned at a 90 degree angle to the warp yarns. The weft yarns increase in yarn size as determined by filament count along the longitudinal axis to change the thickness of the preform. The binder maintains the relative positions of the preform yarns.

IPC 8 full level

F01D 5/28 (2006.01); **F04D 29/02** (2006.01); **F04D 29/32** (2006.01)

CPC (source: EP US)

B29B 11/16 (2013.01 - EP); **D03D 25/005** (2013.01 - EP US); **F01D 5/146** (2013.01 - EP); **F01D 5/147** (2013.01 - EP US); **F01D 5/282** (2013.01 - EP US); **F01D 5/284** (2013.01 - EP); **F04D 29/023** (2013.01 - EP US); **F04D 29/324** (2013.01 - EP US); **F05D 2300/6012** (2013.01 - EP US); **F05D 2300/6033** (2013.01 - EP); **F05D 2300/6034** (2013.01 - EP US); **F05D 2300/614** (2013.01 - EP US); **Y10T 29/49337** (2015.01 - EP US); **Y10T 29/49801** (2015.01 - EP US)

Cited by

US11173633B2; EP3018293A1; EP2944766A4; CN110475921A; EP3604649A4; CN104743087A; FR3136810A1; US10247008B2; WO2023242524A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

EP 2423441 A2 20120229; **EP 2423441 A3 20150318**; **EP 2423441 B1 20190123**; US 2012051935 A1 20120301; US 8662855 B2 20140304

DOCDB simple family (application)

EP 11179499 A 20110831; US 87234610 A 20100831